Complete Summary

GUIDELINE TITLE

Meningococcal disease and college students: recommendations of the Advisory Committee on Immunization Practices (ACIP).

BIBLIOGRAPHIC SOURCE(S)

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

Meningococcal disease

GUIDELINE CATEGORY

Prevention

CLINICAL SPECIALTY

Family Practice
Infectious Diseases
Internal Medicine
Pediatrics
Preventive Medicine

INTENDED USERS

Advanced Practice Nurses
Health Care Providers
Nurses
Physician Assistants

Physicians
Public Health Departments

GUIDELINE OBJECTIVE(S)

- To review new data regarding the risk for meningococcal disease in college students
- To present recommendations developed by the Advisory Committee on Immunization Practices (ACIP) regarding the education of students and parents about meningococcal disease and the polysaccharide meningococcal vaccine

TARGET POPULATION

College students

INTERVENTIONS AND PRACTICES CONSIDERED

Vaccination with the quadrivalent meningococcal polysaccharide A, C, Y, W-135 vaccine (Menomune(R) - A, C, Y, W-135; each dose consists of 50 micrograms of the four purified bacterial capsular polysaccharides), the formulation currently available in the United States.

MAJOR OUTCOMES CONSIDERED

- Risk of meningococcal disease
- Safety and efficacy of the meningococcal polysaccharide vaccine
- Number of cases of meningococcal disease per year
- Number of deaths caused by meningococcal disease per year

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Not stated

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Not stated

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Not applicable

METHODS USED TO ANALYZE THE EVIDENCE

Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Not stated

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

From a societal perspective, the economic costs and benefits of vaccinating a) a cohort of 591,587 freshmen who live in dormitories and b) all freshman enrolled in U.S. colleges, regardless of housing status (n=2.4 million) were evaluated, assuming the benefits of vaccination would last 4 years. Best and worst case scenarios were evaluated by varying cost of vaccine and administration (range: $54–$88), costs per hospitalization ($10,924–$24,030), value of premature death based on lifetime productivity ($1.3–$4.8 million), cost of side effects of vaccine per case ($3,500–$12,270 per one million doses), and average cost of treating a case of sequelae ($0–$1,476). Vaccination coverage (60% and 100%) and vaccine efficacy (80% and 90%) were also varied for evaluation purposes.

Vaccination of freshmen who live in dormitories would result in the administration of approximately 300,00–500,000 doses of vaccine each year, preventing 15–30 cases of meningococcal disease and one to three deaths each year. The cost per case prevented would be $600,000–$1.8 million, at a cost per death prevented of $7 million to $20 million.

Vaccination of all freshmen would result in the administration of approximately 1.4–2.3 million doses of vaccine each year, preventing 37–69 cases of meningococcal disease and two to four deaths caused by meningococcal disease each year. The cost per case prevented would be $1.4–2.9 million, at a cost per death prevented of $22 million to $48 million.

These data are similar to data derived from previous studies. They suggest that for society as a whole, vaccination of college students is unlikely to be cost-effective.

METHOD OF GUIDELINE VALIDATION

Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Not stated

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

College freshmen, particularly those who live in dormitories, are at modestly increased risk for meningococcal disease relative to other persons their age. Vaccination with the currently available quadrivalent meningococcal polysaccharide vaccine will decrease the risk for meningococcal disease among such persons. Vaccination does not eliminate risk because a) the vaccine confers no protection against serogroup B disease and b) although the vaccine is highly effective against serogroups C, Y, W-135, and A, efficacy is <100%.

The risk for meningococcal disease among college students is low; therefore, vaccination of all college students, all freshmen, or only freshmen who live in dormitories or residence halls is not likely to be cost-effective for society as a whole. Thus, the Advisory Committee on Immunization Practices (ACIP) issued the following recommendations regarding the use of meningococcal polysaccharide vaccines for college students.

- Providers of medical care to incoming and current college freshmen, particularly those who plan to or already live in dormitories and residence halls, should, during routine medical care, inform these students and their parents about meningococcal disease and the benefits of vaccination. ACIP (Advisory Committee on Immunization Practices) does not recommend that the level of increased risk among freshmen warrants any specific changes in living situations for freshmen.
- College freshmen who want to reduce their risk for meningococcal disease should either be administered vaccine (by a doctor's office or student health service) or directed to a site where vaccine is available.
- The risk for meningococcal disease among non-freshmen college students is similar to that for the general population. However, the vaccine is safe and efficacious and therefore can be provided to non-freshmen undergraduates who want to reduce their risk for meningococcal disease.
- Colleges should inform incoming and/or current freshmen, particularly those who plan to live or already live in dormitories or residence halls, about meningococcal disease and the availability of a safe and effective vaccine.
- Public health agencies should provide colleges and health-care providers with information about meningococcal disease and the vaccine as well as information regarding how to obtain the vaccine.

Additional Considerations about Vaccination of College Students

- Although the need for revaccination of older children has not been determined, antibody levels decline rapidly over 2-3 years (CDC, 1997). Revaccination may be considered for freshmen who were vaccinated more than 3-5 years earlier (CDC, 2000). Routine revaccination of college students who were vaccinated as freshmen is not indicated.

- College students who are at higher risk for meningococcal disease because of a) underlying immune deficiencies or b) travel to countries in which N. meningitidis is hyperendemic or epidemic (i.e., the meningitis belt of sub-Saharan Africa) should be vaccinated (CDC, 1997).
- College students who are employed as research, industrial, and clinical laboratory personnel who are routinely exposed to N. meningitidis in solutions that may be aerosolized should be considered for vaccination (CDC, 1997).
- No data are available regarding whether other closed civilian populations with characteristics similar to college freshman living in dormitories (e.g., preparatory school students) are at the same increased risk for disease. Prevention efforts should focus on groups in whom higher risk has been documented.

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

REFERENCES SUPPORTING THE RECOMMENDATIONS

References open in a new window

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is not specifically stated for each recommendation.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

College freshmen, especially those who live in dormitories, are at a modestly increased risk for meningococcal disease compared with other persons of the same age, and vaccination with the currently available quadrivalent meningococcal polysaccharide vaccine will decrease their risk for meningococcal disease.

POTENTIAL HARMS

Polysaccharide meningococcal vaccines have been extensively used in mass vaccination programs and are generally considered safe. Adverse reactions are generally mild; the most frequent reaction, reported in 4 to 56% of recipients, is pain and redness at the injection site. Severe allergic reactions or anaphylaxis are uncommon (<0.1 per 100,000 vaccine doses). Neurological reactions (e.g., seizures, anesthesias, paresthesias, diplopia, optic neuritis) are observed infrequently.

QUALIFYING STATEMENTS

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U.S. surveillance data from the 1998-1999 school year suggest that the overall rate of meningococcal disease among undergraduate college students is lower than the rate among persons aged 18-23 years who are not enrolled in college (0.7 vs. 1.5/100,000, respectively). However, rates were higher among specific subgroups of college students. Among the approximately 590,000 freshmen who live in dormitories, the rate of meningococcal disease was 4.6/100,000, higher than any age group in the population other than children aged <2 years, but lower than the threshold of 10/100,000 recommended for initiating meningococcal vaccination campaigns.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Staying Healthy

IOM DOMAIN

Effectiveness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2000 Jun 30

GUIDELINE DEVELOPER(S)

Centers for Disease Control and Prevention - Federal Government Agency [U.S.]

SOURCE(S) OF FUNDING

United States Government

GUIDELINE COMMITTEE

Meningococcal Vaccine and College Students Working Group, Advisory Committee on Immunization Practices (ACIP)

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Advisory Committee on Immunization Practices (ACIP) Membership List, August 1999: John F. Modlin, M.D. (Chairman); Dixie E. Snider, Jr., M.D., M.P.H. (Executive Secretary); Dennis A. Brooks, M.D., M.P.H.; Richard D. Clover, M.D.; David W. Fleming, M.D.; Fernando A. Guerra, M.D.; Charles M. Helms, M.D., Ph.D.; David R. Johnson, M.D., M.P.H.; Chinh T. Le, M.D.; Paul A. Offit, M.D.; Margaret B. Rennels, M.D.; Lucy S. Tompkins, M.D., Ph.D.; Bonnie M. Word, M.D.

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Centers for Disease Control and Prevention (CDC) Staff Members: Nancy E. Rosenstein, M.D. and Bradley A. Perkins, M.D.

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline.

An update is not in progress at this time.

GUIDELINE AVAILABILITY

Electronic copies: An HTML Text version is available from the Centers for Disease Control and Prevention (CDC) Web site.

Also available (in Portable Document Format [PDF]) from the Centers for Disease Control and Prevention (CDC) Web site .

Print copies: Available from the Centers for Disease and Control Prevention, MMWR, Atlanta, GA 30333. Additional copies can be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402-9325; (202) 783-3238.

AVAILABILITY OF COMPANION DOCUMENTS

None available

PATIENT RESOURCES

None available

NGC STATUS

This summary was completed by ECRI on August 28, 2000. The information was verified by the guideline developer as of November 17, 2000.

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